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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,585	04/16/2002	Herman Deweerd	60132-074	1512

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EXAMINER

PRITCHETT, JOSHUA L

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 03/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/674,585

Applicant(s)

DEWEERD ET AL.

Examiner

Joshua L Pritchett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This action is in response to Amendment filed December 1, 2003. Claims 1, 2, 9, 11 and 14-19 have been amended and claim 7 has been cancelled as requested by the applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 6, 8, 9 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dixon (US 5,381,224).

Regarding claim 1, Dixon discloses an optical instrument comprising a transmitter (102) that emits an optical signal; a reflector (302), which directs the optical signal onto a specimen; a detector (256 or 140), which detects a reflected optical signal from the specimen; a first drive mechanism for varying the position of the optical signal on the specimen (col. 6 lines 42-44); and an objective (116) disposed to intercept the optical signal and the reflected optical signal. The objective (116) receives light from both the light source (102) and light reflected from the sample (130) as shown in Fig. 3a (col. 6 lines 20-24). Dixon further discloses the use of a drive mechanism (304) to change the position of the specimen relative to the optical signal (Fig. 3b;

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col. 6 lines 45-47). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the embodiments of Dixon to include the telescope lens system and the drive mechanism to vary the specimen position relative to the optical signal for the purpose of precisely focusing the laser onto the specimen in the desired location on the specimen.

Regarding claim 2, Dixon discloses the reflector (302) directs the optical signal along a first path onto the specimen and directs the reflected optical signal along a second path to the detector (140), the first and second path have a common path segment (Fig. 3b).

Regarding claim 6, Dixon discloses the second drive mechanism move the specimen in a linear manner (col. 6 lines 45-46).

Regarding claim 8, Dixon discloses the first drive mechanism moves the optical signal substantially perpendicular to movement of the specimen (col. 6 lines 42-46).

Regarding claim 9, Dixon discloses the objective (116) is a refractive lens to focus the optical signal onto the specimen (col. 6 lines 3-6).

Regarding claim 16, Dixon discloses a method of scanning fluorescent samples comprising exciting the samples with an optical signal of a known first wavelength (col. 6 lines 59-65); detecting an optical signal of a second wavelength (col. 6 lines 59-65); translating the optical signal in a first and second direction (col. 6 lines 42-44) and translating the sample in a third direction substantially perpendicular to the first and second directions (col. 6 lines 42-46).

Regarding claim 17, Dixon discloses the use of a dichroic beam splitter (252, col. 6 lines 48-49) to focus the incident light to a point on the specimen (Fig. 3b). By focusing the light to a

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point on the specimen the dichroic beam splitter of Dixon would inherently combine the plurality of lasers prior to excitation of the specimen.

Regarding claim 18, Dixon discloses splitting the optical signal into a plurality of optical signals prior to detecting (col. 6 lines 48-55).

Regarding claim 19, Dixon discloses a portion of the exciting optical signal and a portion of the detecting optical signal have a common path (Fig. 3b).

Claims 3-5 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dixon in view of Sharon (US 4,015,906).

Regarding claim 3, Dixon teaches the invention as claimed including a beam splitting mirror (252), and the beam splitting mirror defining one end of the common path segment (Fig. 3b). Dixon lacks the beam splitting mirror having an opening. Sharon teaches a beam splitting mirror (16) with an opening (18). Sharon teaches that the outer fringe of the light is intercepted by the mirror (16) and that the light passing through the opening (18) is a sharply defined focused beam (col. 4 lines 23-29). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace the beam splitting mirror of Dixon with the beam splitting mirror with an opening as taught by Sharon for the purpose of eliminating any excess or stray light created by the scanning of the mirrors in Dixon, so as to excite only a specific region of the specimen and thus obtain more precise results.

Regarding claim 4, Dixon teaches the first path and the second path approach the beam splitting mirror from a first direction and a second direction (Fig. 3b).

Regarding claim 5, Dixon teaches the invention as claimed but lacks reference to the beam splitting mirror allowing the first path to pass through the opening. Sharon teaches the first path passing through the opening of the beam splitting mirror (Fig. 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the beam splitting mirror of Dixon have the first path go through an opening in the beam splitting mirror as taught by Sharon for the purpose of eliminating any excess or stray light created by the scanning of the mirrors in Dixon, so as to excite only a specific region of the specimen and thus obtain more precise results.

Regarding claim 11, Dixon discloses an optical instrument comprising a transmitter (102) that emits an optical signal; a reflector (302), which directs the optical signal onto a specimen; a detector (256 or 140), which detects a reflected optical signal from the specimen; a first drive mechanism for varying the position of the optical signal on the specimen (col. 6 lines 42-44); and an objective (120) disposed to intercept the optical signal and the reflected optical signal. Dixon teaches the invention as claimed including a beam splitting mirror (252), and the beam splitting mirror defining one end of the common path segment (Fig. 3b). Dixon further discloses the use of a drive mechanism (304) to change the position of the specimen relative to the optical signal (Fig. 3b; col. 6 lines 45-47). Dixon lacks the beam splitting mirror having an opening and the first path passing through the opening of the beam splitting mirror. Sharon teaches a beam splitting mirror (16) with an opening (18). Sharon teaches that the outer fringe of the light is intercepted by the mirror (16) and that the light passing through the opening (18) is a sharply defined focused beam (col. 4 lines 23-29). Sharon teaches the first path passing through the opening of the beam splitting mirror (Fig. 1). It would have been obvious to a person of ordinary

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skill in the art at the time the invention was made to replace the beam splitting mirror of Dixon with the beam splitting mirror with an opening as taught by Sharon for the purpose of eliminating any excess or stray light created by the scanning of the mirrors in Dixon, so as to excite only a specific region of the specimen and thus obtain more precise results.

Regarding claim 12, Dixon teaches the invention as claimed but lacks reference to the use of a plurality of lasers. It has been held that the duplication of parts is within the ability of one ordinarily trained in the art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the transmitter of Dixon include a plurality of lasers for the purpose of exposing the specimen to a variety of wavelengths to facilitate faster and more efficient examination of the specimen.

Regarding claim 13, Dixon teaches the use of a dichroic beam splitter (252, col. 6 lines 48-49) to focus the incident light to a point on the specimen (Fig. 3b). By focusing the light to a point on the specimen the dichroic beam splitter of Dixon would inherently combine the plurality of lasers prior to excitation of the specimen.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dixon in view of Blais (US 4,800,271).

Dixon teaches the invention as claimed but lacks reference to the use of a galvanometric torque motor. Blais teaches the use of a galvanometric torque motor (5) in moving optical elements of a system. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the galvanometric torque motor taught by Blais to pivot the

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reflector of Dixon for the purpose of inexpensive yet accurate scanning of the specimen through reflector rotation.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dixon in view of Sharon as applied to claim 11 above, and further in view of Kain (US 5,872,880) and Hasushita (US 5,345,285).

Dixon teaches the invention as claimed but lacks reference to the use of a galvanometric torque motor and a rotating cam linearly moving a lens. Kain teaches the use of galvanometric torque motor (34) in scanning microscopes (Fig. 2). Hasushita teaches the use of a carriage (16), a retainer (11) to fixedly hold the lens (L2) to the carriage and a first (33a) and second (42a) wire attached between the cam and the carriage, whereby rotation of the cam is translated into linear movement of the lens (col. 9 lines 56-63). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the scanning lens of Dixon movable in a linear direction as taught by Hasushita for the purpose of changing the diameter of the optical signal on the surface of the sample. It would further have been obvious to a person of ordinary skill in the art to have the driving mechanism to move the Dixon scanning lens be a galvanometric torque motor as taught by Kain for the purpose of accurately and precisely translating the position of the scanning lens to have a precise optical signal diameter incident the sample.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dixon in view of Sharon as applied to claim 11 above, and further in view of Park (US 5,877,891).

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Dixon teaches the invention as claimed but lacks reference to the use of a stepper motor with a screw. Park teaches the a drive mechanism for adjusting the location of the specimen that includes a precision stepper motor (622) having a screw (626); a carriage (114) having a nut (628) that engages the screw (col. 16 lines 16-17); a retainer (118) to fixedly hold a specimen to the carriage (col. 12 lines 28-31); and the stepper motor operable to rotate the screw (col. 16 lines 15-17), whereby rotation of the screw is translated into linear movement of the specimen (Fig. 6C, col. 12 line 28). Fig. 6C shows that the stepper motor drive mechanism is part of element 116 of Parker, which is an x-y scanning stage as stated in col. 12 of Parker. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the second drive mechanism of Dixon be a stepper motor with a screw as taught by Park for the purpose of eliminating all possible translation in the x and z planes as defined by Dixon and rotation of the specimen in order to reduce experimental error and collect accurate data.

Response to Arguments

Applicant's arguments, see Amendment, filed December 1, 2003, with respect to the specification and drawings have been fully considered and are persuasive. The objection to the specification and drawings has been withdrawn.

Applicant's arguments, see Amendment, filed December 1, 2003, with respect to the information disclosure statement have been fully considered and are persuasive. The objection

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to the information disclosure statement has been withdrawn. All references of the information disclosure statement have now been examined. A copy of the references is no longer required for United States patent documents and therefore the information disclosure statement now complies with USPTO regulations. If the applicant would like an initialed and signed copy of the information disclosure statement the applicant is encouraged to send a clean copy of the PTO-1449 for the examiner to initial and sign.

Applicant's arguments, see Amendment, filed December 1, 2003, with respect to claim 15 have been fully considered and are persuasive. The objection of claim 15 has been withdrawn.

Applicant's arguments, see Amendment, filed December 1, 2003, with respect to the rejection(s) of claim(s) 1 under Dixon have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Dixon. The applicant argues that the newly amended claims teach moving the specimen to change the position of the specimen relative to the optical signal. The examiner directs the applicant's attention to Dixon Fig. 3b, which clearly shows a driving mechanism (304) to change the position of the specimen.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L Pritchett whose telephone number is 571-272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLP



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